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## Short report

## Collaborative care for major depressive disorder in an occupational healthcare setting†

M. C. Vlasveld, C. M. van der Feltz-Cornelis, H. J. Adèr, J. R. Anema, R. Hoedeman, W. van Mechelen and A. T. F. Beekman

**Summary**

Randomised controlled trial to evaluate the effectiveness of collaborative care in a Dutch occupational healthcare setting: 126 workers on sick leave with major depressive disorder were randomised to usual care ( $n=61$ ) or collaborative care ( $n=65$ ). After 3 months, collaborative care was more effective on the primary outcome measure of treatment response (i.e. reduction in symptoms of  $\geq 50\%$ ) on the Patient Health Questionnaire-9 (PHQ-9). However, the groups did not differ on the PHQ-9 as a continuous outcome measure. Implications of these results are discussed.

**Declaration of interest**

C.M.v.d.F.-C.: payment for a presentation at the International Journal of Integrated Care conference, grants for collaborative care trials for anxiety (from The Netherlands Organisation for Health Research and Development, 'ZonMw') and for return to work (from Achmea), and payment from Eli Lilly for a lecture on diabetes and depression. H.J.A.: fee from the Trimbos Institute for consulting on the statistical analyses and comments on the draft manuscript.

Evidence-based treatments for major depressive disorder are available, yet show disappointing results in daily practice. To improve depression outcomes, a primary care treatment model, collaborative care, has been developed in the USA. Key elements of collaborative care are: continuous monitoring of symptoms, collaboration between healthcare professionals and access to a consultant psychiatrist. Moreover, the role of a care manager is introduced, who coordinates care, assists in the management of major depressive disorder and monitors treatment progress. Currently, extensive evidence supports the effectiveness of collaborative care, and new research projects are studying the effectiveness of collaborative care in other countries, populations and healthcare settings.<sup>1,2</sup> In this study, collaborative care was evaluated in a Dutch occupational healthcare setting (trial registration: ISRCTN78462860).<sup>3</sup>

Major depressive disorder is a prevalent condition in Dutch occupational healthcare settings. Dutch workers with major depressive disorder are absent eight to nine times more often than their colleagues without major depressive disorder.<sup>4</sup> In The Netherlands, occupational physicians play a central role in the guidance of workers on sick leave. However, because treatment and sickness certification are separated in the Dutch legislation, there is a lack of communication and collaboration between occupational physicians and the curative sector.<sup>5</sup> Furthermore, access to treatment in specialised mental healthcare is often hampered by waiting lists. Therefore, occupational physicians aim to play a more prominent role themselves in the care of workers on sick leave with major depressive disorder.<sup>6</sup> In the present study, the effectiveness of collaborative care, applied by occupational physician–care managers, is examined for workers with depression on sick leave.

**Method**

In this randomised controlled trial (RCT), the effectiveness of a collaborative care treatment for major depressive disorder was compared with usual care. Computer-generated randomisation took place at participant level. In both groups, participants received sickness guidance as usual by their company's occupational physician, however, only participants allocated to the intervention group also received collaborative care from an

occupational physician–care manager. The study protocol, including a power calculation and the method of masking, is described in greater detail elsewhere.<sup>3,7</sup>

Workers on the sick list for between 4 and 12 weeks were screened with the depression subscale of the Patient Health Questionnaire (PHQ-9).<sup>8</sup> Workers who reached the cut-off score of 10 were contacted for the administration of a diagnostic interview. Those who met the DSM-IV<sup>9</sup> criteria for major depressive disorder and gave informed consent were included. Exclusion criteria are described elsewhere.<sup>3</sup>

The collaborative care intervention consisted of the following elements: 6–12 sessions of problem-solving treatment, manual-guided self-help, a workplace intervention and antidepressant medication. The treatment was closely monitored using the PHQ-9. A web-based tracking system supported the occupational physician–care manager in monitoring and in adhering to the protocol. A psychiatrist was available for consultation.<sup>3</sup>

Data were collected at 3 months after baseline by self-report questionnaire. The primary outcome measure was response, as measured with the PHQ-9 and defined as a reduction of at least 50% in depressive symptoms.<sup>8</sup> The PHQ-9 as a continuous measure is also reported.

Data were analysed with logistic and linear multilevel analyses, using MLwiN software, version 2.15 for Windows XP. Multilevel analyses makes it possible to take into account the hierarchy of the data, with locations of occupational physician–care managers constituting the upper level and participants the level below. Depressive symptom severity at screening was included as a baseline correction. *Post hoc*, the intervention effect was explored in participants with a baseline PHQ-9 score  $\geq 15$ , by including an interaction term of that covariate with the intervention variable.

**Results**

Of 14 595 workers approached, 2955 (20.2%) filled in the screening questionnaire, of whom 52.5% ( $n=1551$ ) screened positive for depression (online Fig. DS1). Subsequently, 1425 workers were excluded and 126 participants were included and randomised in the usual care group ( $n=61$ ) or collaborative care group ( $n=65$ ). Three months after baseline, 98 participants filled in the questionnaire. Almost two-thirds (62%) of the collaborative care group visited the occupational physician–care manager and

†See editorial, pp. 442–443, this issue.

started collaborative care treatment. Baseline characteristics of participants are shown in online Table DS1.

A significant difference was found between collaborative care and usual care in achieving a response: with 50% response in the collaborative care group and 28% response in the usual care group, more individuals in the collaborative care group had at least a 50% reduction in symptoms. The odds ratio was 2.514 (95% CI 1.035–6.110,  $P=0.04$ ). The corresponding number needed to treat (NNT) is 4.5.

For usual care and collaborative care, the mean baseline PHQ-9 scores were 16.0 and 15.9 respectively (online Table DS2). Three months later, the mean scores were 9.9 and 8.9. Both groups did not differ significantly from each other ( $P=0.460$ ). In *post hoc* analyses, a significant difference in favour of collaborative care was found for participants with moderately severe symptoms at baseline ( $P=0.022$ , online Table DS3). In that subgroup, participants in the collaborative care group had a mean improvement from 19.2 to 8.9 (compared with a decrease from 19.4 to 12.1 in the usual care group). Healthcare utilisation by the participants is shown in online Table DS4.

## Discussion

The present study showed that collaborative care, applied in the occupational healthcare setting, was more effective than usual care in terms of response to treatment among individuals on sick leave with major depressive disorder. However, for depressive symptoms as a continuous outcome measure, no effect for collaborative care could be found. In *post hoc* analyses, collaborative care was found to be more effective than usual care among those with moderately severe depression. However, these latter results are secondary and need to be interpreted carefully and confirmed in future research.

Interestingly, a significant effect was found for the dichotomous outcome measure, whereas this was not the case for the continuous one. As previously described by Poirier *et al*, this discrepancy can be explained by the variation in the PHQ-9 scores: collaborative care participants were overrepresented in the groups with a large decrease in symptoms and with no improvement or a slight increase in symptoms, whereas usual care participants were in the majority in the group with a moderate decrease of symptoms.<sup>10</sup> Although response is an internationally recognised outcome measure, these results can be interpreted as modest since an effect on the continuous outcome measure is lacking.

The innovation in this study is the new role of the occupational physician as care manager in the treatment of major depressive disorder. Training and close supervision were given to them, which, together with the web-based tracking system, made it easier for them to adopt their new role. However, a substantial number of the participants did not visit the occupational physician–care manager. Waiting lists, that had to be operated for collaborative care when the inclusion of participants increased quickly, may have contributed to this. Another limitation of this study is the low response rate to the screening procedure, limiting the generalisability of our findings. This may reflect that workers on sick leave did not feel the need for a treatment for major depressive disorder within the occupational healthcare setting. Because of the separation of treatment and sickness certification in Dutch legislation, workers were probably not used to the treatment role of the occupational physician–care manager and a lack of confidence in the occupational physician may have inhibited them from responding.

This was the first study examining collaborative care provided by occupational physician–care managers. Given the modest effect of collaborative care on reducing depressive symptoms and the

suboptimal implementation of collaborative care during the study, further implementation of collaborative care is not yet justified. Future research needs to confirm whether collaborative care has added value for individuals with at least moderately severe depression (PHQ-9  $\geq 15$ ).

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